REFERENCES 61

[44] J. Lettner, D. Song, T. Park, P. Larsen, S. Volckaert, and M. Franz, "Partisan: fast and flexible sanitization via run-time partitioning," in *International Symposium on Research in Attacks, Intrusions, and Defenses*, pp. 403–422, Springer, 2018.

- [45] B. G. Ryder, "Constructing the call graph of a program," *IEEE Transactions on Software Engineering*, no. 3, pp. 216–226, 1979.
- [46] S. Narayan, C. Disselkoen, D. Moghimi, S. Cauligi, E. Johnson, Z. Gang, A. Vahldiek-Oberwagner, R. Sahita, H. Shacham, D. Tullsen, et al., "Swivel: Hardening webassembly against spectre," in USENIX Security Symposium, 2021.
- [47] E. Johnson, D. Thien, Y. Alhessi, S. Narayan, F. Brown, S. Lerner, T. McMullen, S. Savage, and D. Stefan, "Sfi safety for native-compiled wasm," NDSS. Internet Society, 2021.
- [48] J. Cabrera-Arteaga, N. Fitzgerald, M. Monperrus, and B. Baudry, "WASM-MUTATE: Fast and Effective Binary Diversification for WebAssembly," arXiv e-prints, p. arXiv:2309.07638, Sept. 2023.
- [49] M. Willsey, C. Nandi, Y. R. Wang, O. Flatt, Z. Tatlock, and P. Panchekha, "Egg: Fast and extensible equality saturation," Proc. ACM Program. Lang., vol. 5, jan 2021.
- [50] "Stop a wasm compiler bug before it becomes a problem | fastly." https://www.fastly.com/blog/defense-in-depth-stopping-a-wasm-compiler-bug-before-it-became-a-problem, 2021.
- [51] D. Cao, R. Kunkel, C. Nandi, M. Willsey, Z. Tatlock, and N. Polikarpova, "Babble: Learning better abstractions with e-graphs and anti-unification," *Proc. ACM Program. Lang.*, vol. 7, jan 2023.
- [52] R. Tate, M. Stepp, Z. Tatlock, and S. Lerner, "Equality saturation: A new approach to optimization," in *Proceedings of the 36th Annual ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages*, POPL '09, (New York, NY, USA), p. 264–276, Association for Computing Machinery, 2009.
- [53] A. Homescu, S. Neisius, P. Larsen, S. Brunthaler, and M. Franz, "Profile-guided automated software diversity," in *Proceedings of the 2013 IEEE/ACM International Symposium on Code Generation and Optimization (CGO)*, pp. 1–11, IEEE, 2013.
- [54] S. Narayan, C. Disselkoen, D. Moghimi, S. Cauligi, E. Johnson, Z. Gang, A. Vahldiek-Oberwagner, R. Sahita, H. Shacham, D. Tullsen, and D. Stefan, "Swivel: Hardening WebAssembly against spectre," in 30th USENIX Security

62 REFERENCES

- Symposium (USENIX Security 21), pp. 1433–1450, USENIX Association, Aug. 2021.
- [55] T. D. Morgan and J. W. Morgan, "Web timing attacks made practical," Black Hat, 2015.
- [56] T. Schnitzler, K. Kohls, E. Bitsikas, and C. Pöpper, "Hope of delivery: Extracting user locations from mobile instant messengers," in 30th Annual Network and Distributed System Security Symposium, NDSS 2023, San Diego, California, USA, February 27 - March 3, 2023, The Internet Society, 2023.
- [57] S. Cao, N. He, Y. Guo, and H. Wang, "WASMixer: Binary Obfuscation for WebAssembly," arXiv e-prints, p. arXiv:2308.03123, Aug. 2023.
- [58] A. Hilbig, D. Lehmann, and M. Pradel, "An empirical study of real-world webassembly binaries: Security, languages, use cases," *Proceedings of the Web Conference 2021*, 2021.
- [59] Kaspersky, "The state of cryptojacking in the first three quarters of 2022," 2022.
- [60] Mozilla, "Protections Against Fingerprinting and Cryptocurrency Mining Available in Firefox Nightly and Beta," 2019.
- [61] S. Bhansali, A. Aris, A. Acar, H. Oz, and A. S. Uluagac, "A first look at code obfuscation for webassembly," in *Proceedings of the 15th ACM Conference on Security and Privacy in Wireless and Mobile Networks*, WiSec '22, (New York, NY, USA), p. 140–145, Association for Computing Machinery, 2022.
- [62] J. Cabrera-Arteaga, M. Monperrus, T. Toady, and B. Baudry, "Webassembly diversification for malware evasion," *Computers & Security*, vol. 131, p. 103296, 2023.
- [63] E. Tekiner, A. Acar, A. S. Uluagac, E. Kirda, and A. A. Selcuk, "Inbrowser cryptomining for good: An untold story," in 2021 IEEE International Conference on Decentralized Applications and Infrastructures (DAPPS), pp. 20–29, 2021.
- [64] P. Kocher, J. Horn, A. Fogh, D. Genkin, D. Gruss, W. Haas, M. Hamburg, M. Lipp, S. Mangard, T. Prescher, M. Schwarz, and Y. Yarom, "Spectre attacks: Exploiting speculative execution," in 2019 IEEE Symposium on Security and Privacy (SP), pp. 1–19, 2019.

${f Part~II}$ Included papers